

ENVIRONMENTAL EPIDEMIOLOGY PROGRAM

Tooele Railroad Spur (TRS)

Site Description

The TRS is located in the City of Tooele, Tooele County, Utah. The railroad runs from the International Smelting and Refining (ISR) site and enters the city from the east. The spur is roughly 10 feet wide and runs approximately 3,400 feet through the city. As the spur enters the city, it runs along a public driving range and golf course. A gravel path for the golf carts lies on top of the spur from the clubhouse to the nearby Oquirrh Hills School. To the south of the spur, is the Tooele Youth Garden.

The railroad spur extends along the north side of Oquirrh Hills School, previously used for special needs children. The Oquirrh Hills School is now a “Head Start” program for 3- and 4-year-olds. From the Oquirrh Hills School, the spur then crosses 7th, 6th, 5th, and 4th Streets, and Broadway Avenue. The spur runs through secured Railroad Museum property, and then under East Vine Street. New homes were constructed by the government housing authority on and around the spur between 7th Street and 4th Street.

History

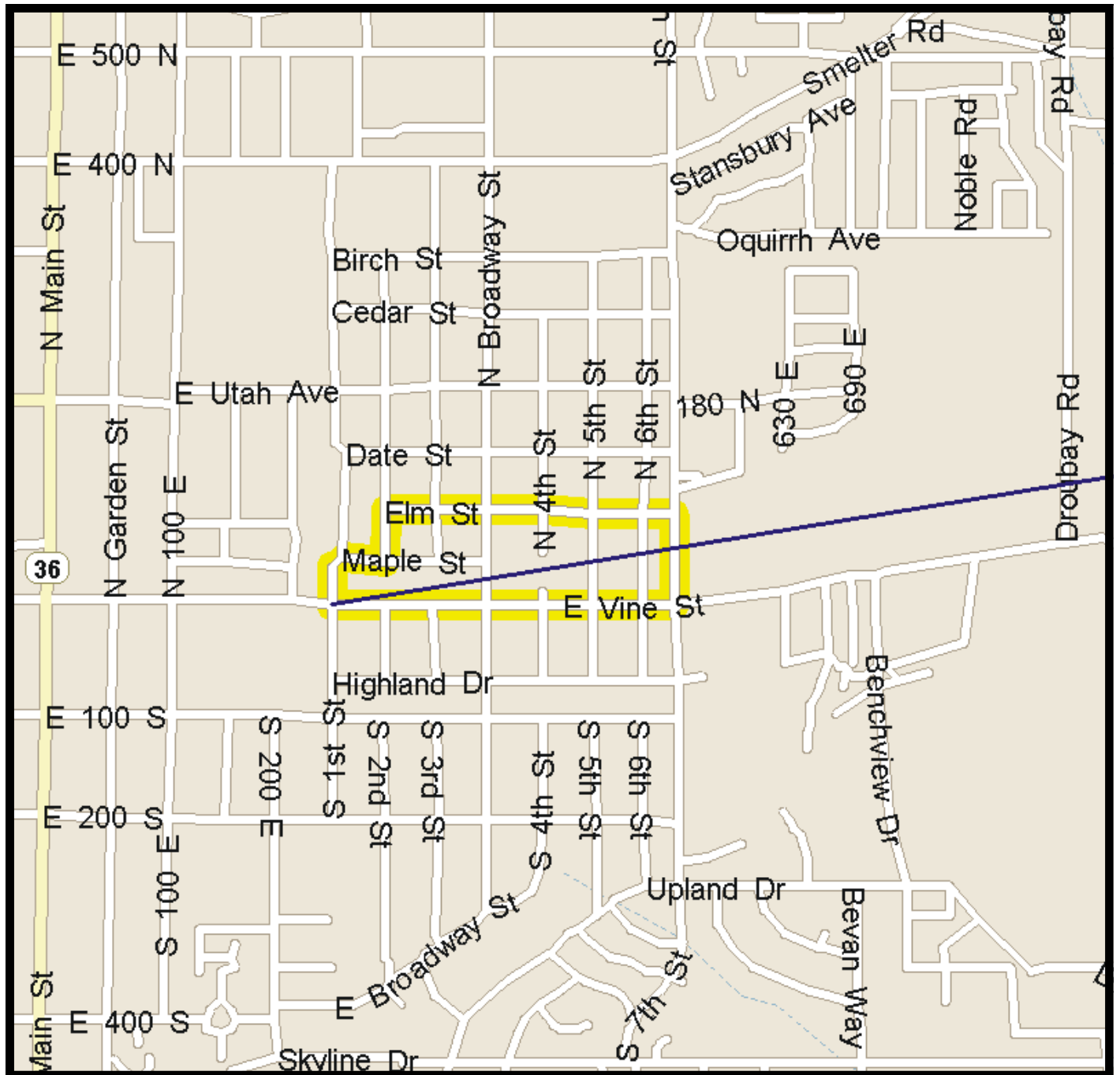
International Smelting and Refining (ISR) began operating a copper smelter in 1910, added a lead smelter in 1912, and was acquired by Anaconda Copper in 1915. Subsequently, a lead-zinc sulfide flotation mill was added to the facility in 1924, and a slag treatment plant in 1941. In the early years of operation, tailings, slag and flue dust were produced at an annual rate of approximately 650,000 tons/year; these wastes were disposed on-site. As ore supplies began declining, output decreased. The copper smelter was closed in 1946 and lead smelting ceased by 1972.

Interest in the Tooele Railroad Spur site began in January 2000, when the Tooele County Health Department (TCHD) discovered elevated levels of metals in residential soil. Subsequent sampling revealed levels of arsenic, aluminum, antimony, copper, lead, vanadium, and zinc were elevated. TCHD requested that the Environmental Epidemiology Program (EEP) of the Utah Department of Health (UDOH) conduct a health consultation to identify any public health hazards posed by the Tooele Railroad Spur.

Lead is the only chemical of concern for adults. For children, arsenic and lead levels are of health concern. Levels of arsenic, copper, lead, and zinc are chemicals of concern for pica children (pica children frequently crave and consume nonfood items such as dirt, sand, paint chips, etc.).

A copy of the health consultation can be obtained through the Tooele County Health Department or by contacting Jason Scholl, Utah Department of Health Environmental Epidemiology program, (801) 538-6191.

Tooele Railroad Spur



 = Tooele Railroad Spur residential boundaries

 = Railroad Spur

EPA Remediation

Atlantic Richfield Company, under oversight from the EPA, completed remediation activities of residential properties in the Tooele Railroad Spur in September 2005. Since remediation work has been completed, and the contaminated soil has been removed, the site is no longer considered a public health hazard.



Recommendations

ATSDR recognizes that the unique vulnerabilities of infants and children require special emphasis in communities faced with contamination of their water, soil, air or food. Children face a greater risk than adults from environmental hazards. Children are more likely to be exposed to contaminants because they play outdoors, often bring food into contaminated areas, and are more likely to come into contact with dust and soil. Also, because children's bodies are still developing, children can sustain permanent damage if toxic exposures occur during critical growth stages. Children's health was considered as part of this health consultation.

The EEP recommends that residents in the vicinity of the Tooele Railroad Spur take the following steps to reduce the likelihood of adverse health effects in children due to exposure to contaminants from TRS:

- Get children ages 6 and younger lead tested annually. Contact the Tooele County Health Department or your local health care provider for testing.
- Eat healthy foods high in iron and calcium.
- Encourage children who play in the area to wash their hands and face often.
- Wash and peel any locally grown fruits and vegetables.



Arsenic

Arsenic is a naturally occurring element and is found in two forms, inorganic and organic. Inorganic arsenic comes from treating copper and lead ores. Both forms have no smell, and most have no special taste. Thus, one cannot usually tell if arsenic is present in food, water, or air.

Most of the arsenic ingested from contaminated water, soil, or food quickly enters into the body. Inhalation of arsenic contaminated dusts can result in contaminated dust particles settling onto the lining of the lungs, and subsequent entry of arsenic into the body. The body usually eliminates arsenic through the urine. The single most characteristic effect of long-term oral exposure to inorganic arsenic is a pattern of skin

changes. This includes a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. While these skin changes are not considered to be a health concern in their own right, a small number of the corns may ultimately develop into skin cancer.

The ingestion of arsenic has also been reported to increase the risk of cancer in the liver, bladder, kidney, and lungs. The National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), and Environmental Protection Agency (EPA) have determined that arsenic is a human carcinogen.



Copper

Copper is a reddish metal that occurs naturally in rock, soil, water, sediment, and, at low levels, air. Copper also occurs naturally in all plants and animals. Copper rapidly enters the bloodstream and is distributed throughout the body after ingestion. The human body is very good at blocking high levels of copper from entering the bloodstream. Copper leaves the body in feces and urine, mostly in feces. It takes several days for copper to leave the body.

Copper is essential for good health. However, exposure to higher doses can be harmful. Long-term exposure to copper dust can irritate the nose, mouth,

and eyes, and cause headaches, dizziness, nausea, and diarrhea. If water that contains higher than normal levels of copper is ingested, it may cause nausea, vomiting, stomach cramps, or diarrhea. Intentionally high intakes of copper can cause liver and kidney damage and even death.

Children with soil eating behavior are therefore at increased risk for showing adverse health effects due to the ingestion of copper in the soil at the Tooele Railroad Site.



Lead

Lead occurs naturally in the environment; however, most of the lead dispersed throughout the environment comes from human usage. Lead is used in paints, ceramic products, caulking, gasoline additives, ammunition, and many other applications. Its use has been reduced in recent years because of lead's harmful effects. People living near hazardous waste sites can be exposed to lead and chemicals that contain lead by breathing air, drinking water, eating foods, or swallowing or touching dust or dirt that contains lead. Once in the body, lead is mainly stored in the bones and teeth until it leaves the body through feces.

Lead can affect almost every organ and system in the body. Studies of lead exposure in humans do not generally correlate exposure levels to health effects, but rather absorbed dose to effects. At high levels, greater

than 40 micrograms per deciliter of blood (40 µg/dL), lead exposure in adults may cause decreased reaction time, weakness in fingers, wrists, or ankles, memory loss, and anemia. Lead exposure may also damage the kidneys and the reproductive system.

Children are more sensitive to the effects of lead than adults. Fetuses exposed to lead in the womb (due to the mother's high blood lead levels) may be born prematurely and have lower weights at birth. Exposure in the womb, during infancy, or in early childhood may also slow mental development and lower intelligence later in childhood. There is evidence that some effects may persist beyond childhood.

The Centers for Disease Control and Prevention (CDC) has determined that blood levels greater than 10 µg/dL in children are considered elevated.



Zinc

Zinc is one of the most common elements in the earth's crust. Zinc is found in the air, soil, and water and is present in all foods. In its pure (or metallic) form, zinc is a bluish-white, shiny metal. Zinc compounds that may be found at hazardous waste sites are zinc chloride, zinc oxide, zinc sulfate, and zinc sulfide.

Zinc compounds are widely used in industry. Zinc compounds are used by the drug industry as ingredients in some common products, such as vitamin supplements, sun blocks, diaper rash ointments, deodorants, athlete's foot preparations, acne and poison ivy preparations, and antidandruff shampoos.

If large doses of zinc are taken by mouth even for a short time, stomach cramps, nausea, and vomiting may occur. Ingesting high levels of zinc for several months may cause anemia, damage the pancreas, and decrease levels of high-density lipoprotein (HDL) cholesterol. Ingestion of contaminated soil is not expected to cause adverse health effects for children but may cause adverse health effects in children that have pica behavior.

Dust Control



- Remove shoes before entering your home.
- Wet-mop floors.
- Damp-dust counters, tables and window ledges regularly.

- Consider upgrading your vacuum cleaner bags to those that filter better or simply change your bag more often. A HEPA (high-efficiency particulate air) filter reduces dust levels better.
- Wash the soil from homegrown fruits and vegetables before bringing them into the home.
- Keep pets out of areas with contaminated soil. Dogs and cats carry contaminated soil on their feet and fur into the home.
- Bathe your pets frequently.
- Maintain a good lawn or groundcover.
- Change A/C and furnace filters regularly.
- Keep windows and door shut on windy days.

Gardening

- Buy some, Grow some. Eating a variety of homegrown and commercial products can reduce your potential exposure.
- Avoid eating or drinking while gardening, contaminated dust may get on your food and you could accidentally swallow it.
- Dampen soil with water before beginning gardening to limit the amount of dust you inhale.
- Increase the organic matter in your soil by adding compost of manure from an outside source.
- Soak garden produce in cool water and rinse thoroughly until water runs clear.
- Scrub firm fruits and vegetables with a vegetable cleaning brush to remove dust and dirt.
- Peel root crops.

- Wash hands and face after gardening.
- Remove and immediately launder gardening clothes.



For More Information

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Agency for Toxic Substance and
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